



GLASGOW REGIONAL LANDFILL METHANE RECOVERY TO ELECTRIFICATION PROJECT

By Mayor Rhonda Riherd Trautman
CRERES Board Meeting May 22, 2014



Overview

- History of Project
- Partnerships
- Funding Sources
- Timeline
- Project Details


HISTORY

- The Glasgow Regional Landfill has been listed as a “candidate” landfill by the EPA for Methane Recovery for a number of years.
- The City of Glasgow has looked at options for managing the Methane at the landfill for nearly 10 years.
- With the partnership between Farmers Rural Electric Cooperative (FRECC) and East Kentucky Power Cooperative (EKPC), the City expects operations to be underway by 2015.

Glasgow Regional Landfill Info

- Opened 1983
- Estimated closure year 2100
- Design capacity 9.9 million tons
- Currently has a passive gas venting system with 72 Vents.



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- In 2012, Cornerstone Environment Group conducted a feasibility study on behalf of the City of Glasgow to assess the content, quality and accessibility of the Methane.
 - Determined at that time there was sufficient, high quality Methane to allow for a successful capture and electrification project.



PARTNERSHIPS

- The unique sustainable green energy project involves a partnership between

City of Glasgow

East Kentucky Power Cooperative (EKPC)

Farmers Rural Electric Cooperative (FRECC),

- Landfill gas collection system will be installed by the City of Glasgow.
- The captured gas will be sold to EKPC at a wholesale rate.
- EKPC will build and operate a generator facility on site and will generate electricity from the landfill gas for sale to FRECC.



FUNDING

Landfill Methane Gas Recovery and Utilization

Funded By:

U.S. Department of Agriculture Rural Economic Development Loan
Energy Efficiency and Conservation for Local Governments
Kentucky Energy and Environment Cabinet

Supported By:

Governor Steve Beshear • Mayor Rhonda Trautman • The Glasgow City Council



A Trachstone Energy Cooperative



EAST KENTUCKY POWER COOPERATIVE

A Trachstone Energy Cooperative



The City's Investment - \$1.3 million


- Via FRECC the City was able to obtain a \$1,000,000 no interest loan from the USDA by way of the Rural Economic Development Loan and Grant Program (REDLG).
- The REDLG program provides funding to rural projects through local utility organizations. Under the REDLoan program, USDA provides zero interest loans to local utilities which they, in turn, pass through to local businesses (ultimate recipients) for projects that will create and retain employment in rural areas. The ultimate recipients repay the lending utility directly.
- The City also received \$100,000 in grant funds from the Kentucky Energy Cabinet's Energy Efficiency Grant Program.
- The balance of the funding will be from the Landfill Fund (City) which is funded by sanitation fees, recycling revenue and tipping charges.
- NO local tax dollars will be used for the construction.
- The sale of the methane gas generates cash flow for the City – which will be used to pay off the REDLG Loan over 10 year period.
- We estimate to generate between \$100,000 and \$130,000 annually in revenue.

East Kentucky Power Investment

- The City of Glasgow will lease a plot of land to EKPC to build the facility to house the generator.
- EKPC will own, operate and maintain the generator.
- Investment is estimated at \$2.5 million including the building, the generator and electrification system.





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FRECC


- The electricity generated will provide FRECC a local sustainable source of power.
- FRECC initiated the project with the City and has as been a primary partner in getting the project off the ground.
- FRECC applied to the USDA for the \$1,000,000 REDLG funds which in turn is loaned to the City at no interest for 10 years.

Glasgow Water Company – added benefit

- The City of Glasgow owns the Glasgow Water Company.
- The Glasgow Water Company's Waste Water Treatment Plant (WWTP) is located just adjacent to the Landfill.
- The WWTP is currently undergoing an \$8 million upgrade.
- Plans for upgrade included a emergency generator, estimated to cost approximately \$500,000.
- The WWTP is powered by the Glasgow Electric Plant Board (GEPB) who receives power from the TVA.
- Via an agreement between FRECC and TVA, a redundant power source will be run to the WWTP to provide backup emergency power from the Methane Generator.
- This is estimated to save the City of Glasgow's Water Company approximately \$500,000.



TIMELINE

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- Started talking to Bill Prather at FRECC in Feb. 2011 after taking office in January.
 - Feasibility Study was finished in Feb. 2012
 - Talks between the City, FRECC and EKPC moved forward during 2012 and 2013. Plans are finalized December 2013.
 - Governor attended official “Kick Off and Check Presentation” on April 9th, 2014
 - Drilling on gas collection wells was finished April 25th 2014.
 - Installation of gas collection pipes was started last week of April, 2014
 - Flare system will be delivered and installed in July 2014
 - City will take possession of Flare July 25th 2014 and will start monitoring the gas quality and quantity of the methane.
 - EKPC will begin construction of Generator Facility Fall 2014.
 - Anticipated online production April-May 2015



PROJECT DETAILS



Why Renewable Energy?
Why Landfill Gas?

From Trash to Power:



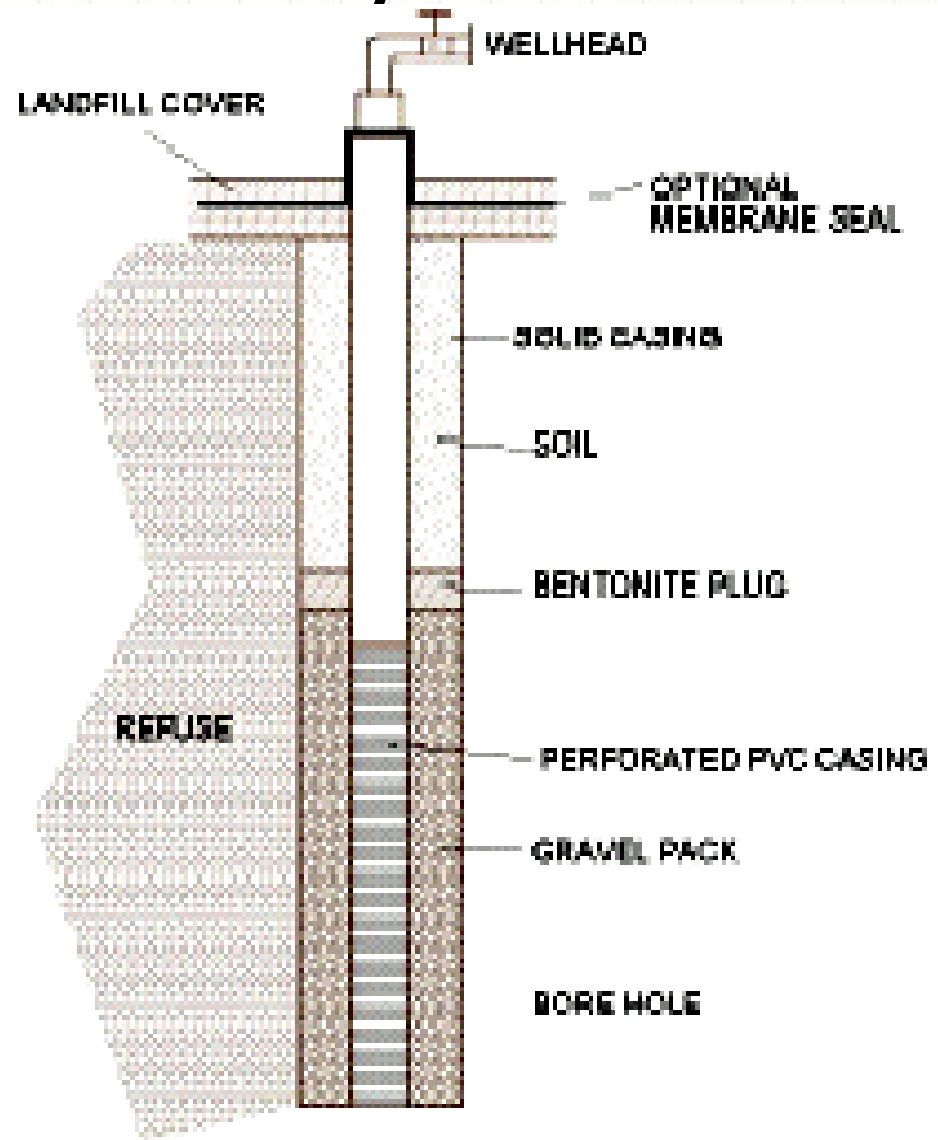
Landfill Gas to Electricity

- Landfill owner installs the collection and control system....



Landfill Gas to Electricity

...that run throughout the landfill and travel underground to the facility...



Landfill Gas to Electricity

The landfill gas is used as fuel to spin reciprocating engines and produce electricity 24/7

Cat 3516 LE Engine/Gensets



Electricity

1 megawatt of electricity =
enough for 500 homes in
Glasgow, Kentucky



Environmental Benefits

Environmental Benefits

1 megawatt of electricity, equivalent to any one of the following annual benefits:

- Offsetting use of 213 railcars of coal
- Removing emissions equivalent to 8,338 vehicles

Total Equivalent Emissions Reduced:

- 1,992 tons of methane per year
- 5,696 tons of carbon dioxide per year
- Carbon sequestered of 12,500 acres of pine forests
- CO₂ emissions from 6,600,000 gallons of gasoline consumed
- CO₂ emissions from 136,500 barrels of oil consumed

Hot Dogs anyone?



Hot dogs after 10 years in a sanitary landfill



QUESTIONS?